IRD-3111

Standard definition receiver/decoder with ASI and RF inputs

The IRD-3111 combines RF demodulation and MPEG-2 decoding of ASI transport streams to SD video. It also provides processing of key video and audio parameters and signal probing functions for feed aggregation, distribution, and monitoring applications by broadcasters and TV service providers.

DVB-ASI, ATSC off-air or satellite signals fed to the IRD-3111 can be demodulated and decoded to provide SD video with embedded multi-channel audio, in all leading formats, as well as composite video and stereo analog audio for monitoring. The IRD is also available with a DVB-CI slot, supporting leading Conditional Access Systems, and allowing descrambling of multiple encrypted services.

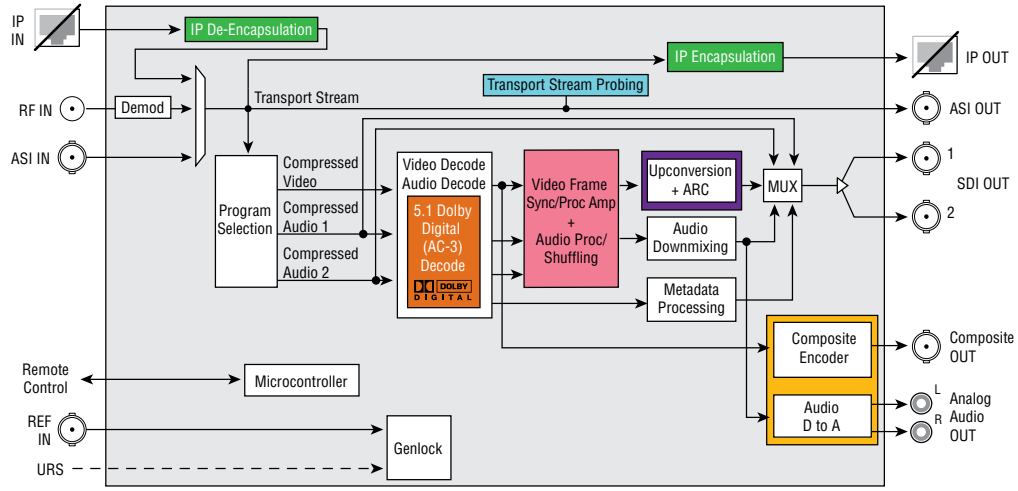
With its optional Gigabit Ethernet port, the IRD-3111 can decode an incoming IP stream, or act as a gateway by performing IP encapsulation of an input RF or ASI transport stream in either RTP or UDP mode.

The IRD also provides optional video signal processing with frame synchronization and selectable delay, as well as proc amp, aspect ratio conversion and upconversion to HD.

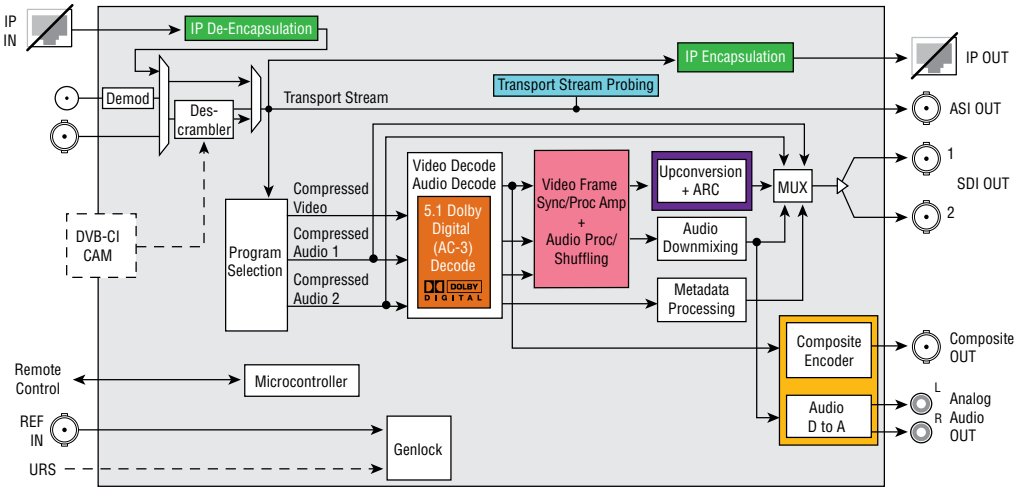
The IRD can decode an extensive range of Metadata, such as CEA-608 compliant closed captioning, Teletext, AFD, V-chip and DVITC Time Code, which can be embedded in the decoded SDI signal. Transport Stream Metadata, such as PSIP can also be analyzed.

The audio processing capabilities of the IRD-3111 are also extensive, with dual audio decoding of MPEG-1 and Dolby Digital (AC-3) 2.0 audio. Optionally, the IRD-3111 also performs embedding of decoded Dolby Digital (AC-3) 5.1 audio, with discrete 8-channel output.

In addition, the IRD-3111 performs a wide range of signal quality probing, with user-defined alarm settings on an extensive range of transport stream parameters, including TR 101 290 alarms, transport stream structure analysis and individual program statistics.



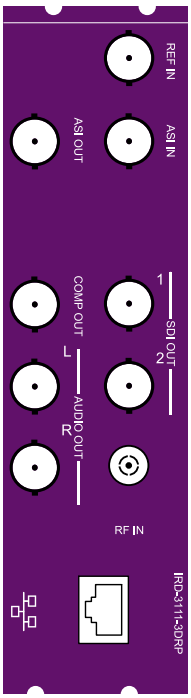
IRD-3111 Functional Block Diagram



IRD-3111-CI Functional Block Diagram

Options

- IRD-31NN-OPT-FS: Frame Synchronization and Delay Option with Reference and Genlock
- IRD-31NN-OPT-UC: Upconverter Option with Advanced Audio Proc
- IRD-31NN-OPT-ANA: Composite and Analog Audio Output Option
- IRD-31NN-OPT-TS-PROBE: Transport Stream Probing Option
- IRD-31NN-OPT-DOLBY: Dolby Digital (AC-3) 5.1 Audio Decoder Option
- IRD-31NN-OPT-ETH: Ethernet Input/Output Option for IRD-3111



IRD-3111-3DRP

IRD-3111 KEY FEATURES AND BENEFITS

Input/output versatility

- Single 8VSB or QPSK/8PSK RF input
- Single ASI transport stream input
- IP transport stream input
- Single ASI transport stream output for signal monitoring or distribution
- Optional IP transport stream input/output: IRD-3111 can decode an incoming IP stream or an input RF or ASI signal can be re-transmitted as IP with forward error correction (FEC) for improved quality
- Dual SD-SDI outputs (HD/SD SDI with upconverter option)
- Composite video and stereo analog audio monitoring outputs

Conditional access

- DVB-CI Common Interface slot allow insertion of CAM card
- Allow descrambling of multiple programs encrypted by leading DVB Conditional Access Systems
- Supports BISS-1

Easy input and program selection

- Manual or automatic input selection mode
- Automatic mode allows switching to backup input upon loss of signal on active input, with adjustable duration
- Program selection using local control or iControl
- Extensive transport stream structure is displayed allowing easy identification of individual programs in an MPTS
- MPTS automatic program selection mode and recovery
- Extensive video decoding
- The IRD can decode signals in either 720 x 486i59.94 or 720 x 576i50 formats
- Support of unscrambled DigiCipher II streams

Comprehensive audio decoding

- Decoding of MPEG-1 layer 2 stereo audio
- Support of Dolby Digital (AC-3) 2.0 audio
- Optional decoding and embedding of Dolby Digital (AC-3) 5.1 audio to SDI with support of main and associated audio services for up to discrete 8-channel output
- Selectable passthrough of Dolby Digital stream to SDI
- Decoding of AAC audio for 2/0 and 1/0 coding modes

Frame synchronizer/delay, reference input and video proc

- Supports timing, full phasing and freeze modes
- Reference can be external via BNC connection, internal using Densité REF-1801 module or directly from the decoded signal with selectable Genlock modes
- Video proc amp functions including, brightness, saturation, hue and contrast

Decoded video format identification and optional upconversion

- Convenient identification of key video parameters
  - Aspect ratio identification: 16:9 or 4:3
  - Video resolution
- Output formats include:
  - 720 x 486i59.94 and 720 x 576i50
- With optional upconversion option:
  - 1920 x 1080i59.94
  - 1920 x 1080i50
  - 1280 x 720p59.94
  - 1280 x 720p50

Audio processing and format identification

- Provides downmix of 5.1 channel to Lt/Rt or Lo/Ro modes
- Extensive AC-3 status reporting, including:
  - Service and source channel ID
  - Sample rate detection
  - Bit rate reporting
- Support for Secondary Audio Program (SAP)
- Configurable Dolby Digital dynamic range and compression
- Dolby Metadata embedding on SDI

Metadata extraction, display and embedding

The following can be extracted from the Transport Stream (TS) and embedded in output SDI signal:

- EIA-608 closed captioning
- WST Teletext
- SMPTE 12M Time Code
- DVB Subtitling
- SMPTE 2016 AFD flag

- Extensive PSIP data extraction, including:
  - Time and date and other STT data
  - Channel number and other VCT parameters
  - Event description and EIT Event Information Table
  - Rating and other RRT data
  - TSID

Transport stream probing and alarming

- Transport Stream (TS) monitoring and alarming with user-defined thresholds and settings:
  - TR 101 290 Priority 1 and Priority 2 alarming on key parameters
  - TS Bit rate
  - TS ID and number of programs as identified in PAT
  - Network ID and name as identified in NIT
  - Logging of alarms using iControl
- Detailed TS structure reporting using graphical and hierarchical views
- Individual program data statistics, including individual program bit rate, content and PMT data

IRD-3111 TECHNICAL SPECIFICATIONS

8VSB INPUT (IRD-3111-VQ only)

Quantity/ connector:	One input with F-type connector, 75 ohm
Tuning range:	51 MHz-858 MHz
Input level:	-27 dBmV to +33 dBmV

QPSK/8PSK INPUT (IRD-3111-DVB-S2 only)

Quantity/ connector:	One input with F-type connector, 75 ohm
Demodulation:	DVB-S (QPSK) ETSI EN 300 421 DVB-S2 (QPSK/8PSK) ETSI EN 302 307
Tuning range:	940 to 2150 MHz (in 0.5 MHz steps)
Symbol rate range:	DVB-S: 2 to 45 MSymbols/s DVB-S2: 10 to 30 MSymbols/s
Input level:	-25 dBm to -65 dBm

ASI INPUT

Quantity/ connector:	One input with BNC connector
Standards:	EN50083-9 (V2:3/98) DVB ASI
Data bit rate:	DVB ASI: Up to 80 Mbps
Mode:	tBurst and byte supported
TS packet length:	188/204 byte packets
Return loss:	>15 dB up to 270 MHz

ASI OUTPUT

Quantity/ connector:	One output with BNC connector

IP INPUT/OUTPUT

Quantity/ connector:	One gigabit Ethernet with RJ45 connector IEEE 802.3
Standards:	Pro-MPEG code of practice 3 (CoP3)
Stream protocols:	IP/UDP and RTP

VIDEO DECODER

Compatibility standard:	MPEG-2 compatible MP at HL 4:2:0, resolution up to 525, 59.94 Hz and 625, 50 Hz ATSC A/53
Bit rate:	Up to 25 Mbps

AUDIO DECODER

Standard:	MPEG-1 layer-II Dolby Digital (AC-3) audio 2.0 Optional Dolby Digital (AC-3) Audio 5.1 AAC audio 2/0 and 1/0 Service/channels: as per ATSC A/54A

VIDEO OUTPUTS

SDI outputs:	Two outputs with BNC connectors
Supported formats:	SMPTE-259-C (270 Mbps), SD 480i59.94, 576i50
With optional upconversion:	SMPTE 292M (1.485, 1.485/1.001Gbps) HD: SMPTE 274M: 1080i59.94, 1080i50 HD: SMPTE 296M: 720p59.94, 720p50
Embedded audio:	SMPTE-299M, SMPTE-272M
Return loss:	>15 dB up to 1.5 GHz
Jitter:	<0.2 UI as per SMPTE-259M for SD output <0.2 UI as per SMPTE-292M for HD output

MONITORING OUTPUTS

Analog video: BNC connector	NTSC 525/60, PAL (625/50) with one
Analog audio:	Unbalanced analog audio with two RCA connectors

VIDEO AND TS METADATA

CC data extraction:	NTSC CC1 and CC2 as per EIA-608B
DTV CC:	EIA-608B compliant bytes of EIA-708B
CC embedding:	CC Embedding as per SMPTE-334M
Teletext:	WST/EIA 300 706
Time Code:	SMPTE 12M
PSIP:	ATSC PSIP standard A/65

REFERENCE INPUT

Reference input:	One input with BNC connector
Signal:	SMPTE 170M/SMPTE 318M/ITU 624-4/ BUT 470-6 black burst SMPTE 274M/SMPTE 296M tri-level sync (black)
Return loss:	>35 dB up to 5.75 MHz

ELECTRICAL

Power:	25 W

ORDERING INFORMATION

Densité 3 frame	Description
IRD-3111-VQ	SD receiver/decoder with ASI and 8VSB inputs
IRD-3111-DVB-S2	SD receiver/decoder with ASI and QPSK/8PSK inputs
IRD-3111-DVB-S2-CI	SD receiver/decoder with ASI & DVB-S/S2 inputs & DVB-CI support
IRD-3111-3DRP	Double rear connector panel

Options	Description
IRD-31NN-OPT-FS	Frame synchronization and delay option with reference and Genlock
IRD-31NN-OPT-ANA	Composite and analog audio output option
IRD-31NN-OPT-UC	Upconverter option with advanced audio proc
IRD-31NN-OPT-TS-PROBE	Transport stream probing option
IRD-31NN-OPT-DOLBY	Dolby Digital (AC-3) 5.1 audio decoder option
IRD-3111-OPT-ETH	Gigabit Ethernet input/output option for IRD-3111
Related products	Densité REF-1801 reference module
Remote control	iControl, iControl Solo, RCP-200